

# Aquaculture in Alberta

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## SELLING FISH OUTSIDE ALBERTA



Processing Rainbow trout fillets

Are you one of the growing number of fish culturists producing table food fish for sale, or are you considering it for the future as your operation expands? Either way, you need to know the legal requirements for processing and shipping fish for food.

For fish processed and sold within Alberta, responsibility for regulation and inspection rests with the provincial government. Responsibility for fish shipped outside the province, on the other hand, comes under the Canadian Food Inspection Agency (CFIA).

The CFIA was created in April 1997, when food inspection, animal health and plant protection programs from four

federal departments (Agriculture & Agri-Food Canada, Fisheries and Oceans, Health Canada and Industry Canada) were brought together into a single body. The CFIA is headed by a President, who reports to the Minister of Agriculture and Agri-Food. The agency administers a number of federal Acts, including the Fish Inspection Act.

Anyone who exports fish or ships fish from one province to another, with some specific exceptions, must hold either a "Certificate of Registration" or a "Fish Export Licence", both issued by the CFIA.

If you process fish and ship outside Alberta, you need to be federally registered, meaning you require a

Certificate of Registration. This is true, even if you are shipping to a registered processing plant. Processing, in this case, includes such operations as cleaning, icing, filleting, packing, canning, smoking, or cooking.

If you ship live fish outside Alberta, either to be processed or to be sold live at the retail level, you do not require federal registration, but you will need a Fish Export Licence.

### Features

Selling Fish Outside Alberta	1
Gator Decoy Shows Mixed Results	2
Raising Organic Fish	3
Silver Carp Algae Control Trials	4
Fish Processing Available	5
Aquaculture - A New Family Farm Venture	6
Aquaculture Section Update	7
Alberta Fish Farmers Association	7
Courses, Publications & Events	8
Editor's Notes	8



In fact, shipping live fish from an aquaculture operation is one of the specific purposes for which the export licence was intended.

The requirements for an export licence or a certificate of registration are set out in the Fish Inspection Regulations. To become federally registered, fish processors must develop a quality control program for their plant, submit it to the CFIA for review and acceptance, and then apply the conditions to their processing operations. This is called a "QMP" or Quality Management Program.

In a QMP, there are three basic control components: a Prerequisite Plan; a Regulatory Action Plan; and a "HACCP" plan. HACCP (Hazard Analysis Critical Control Point) is an internationally recognized system for ensuring safe food production. The QMP also deals with non-safety issues, including fish quality and federal regulatory requirements, such as labeling.

To view the Fish Inspection Regulations, or for more information on any of our activities, please visit our website at [www.cfia-acia.agr.ca](http://www.cfia-acia.agr.ca). Click on "Quality Management Program" under "Fish and Seafood" on the Table of Contents for more information on how to develop a QMP, or for an application form for federal registration.

You can also contact one of our regional offices (the CFIA divides Alberta into two regions for administrative purposes). 🐸

**CFIA's Alberta North office is at 9021  
46th St. NW, Edmonton, T6B 3B2.  
Ph: (780) 495-7023  
Fax: (780) 495-7022**

**CFIA's Alberta South office is at 3650  
36th St. NW, Calgary, T2L 2L1.  
Ph: (403) 299-7674  
Fax: (403) 292-5692**

## Gator Decoy Shows Mixed Results

Alberta Agriculture's Aquaculture section recently tested a plastic alligator to reduce bird predation on fish. The alligator decoy showed inconclusive results for keeping birds away from dugouts.



In order to simulate live alligators, decoys must be moved frequently to be effective.

"We saw no bird activity for the first month", said Eric Hutchings, biologist with the aquaculture section. "Then a great blue heron moved in, making daily visits, late in the evening. At one time the blue heron was seen, perched atop the decoy." After two weeks of daily visits, our staff had to intervene and scare the heron away.

The next bird confrontation occurred mid-July. The staff spotted an adult cormorant swimming in the dugout, away from the alligator decoy. It would not leave the water. Four days later, a heron was observed at the far end of the pond. Then, another four days later, a young cormorant was seen, swimming, near some dead fish.

"These field observations demonstrated the level of control that might be expected," said Hutchings. In our dugout, the alligator decoy worked just like any immobile scarecrow, providing short term relief only. Similar reports have been received from others who have purchased alligator decoys. However, others have reported excellent results when the "gator" decoys were routinely moved around!

**If birds are eating your fish, simply placing an alligator decoy in the pond will probably not help for long! You must routinely change the 'gator' decoy's position.**

Will the gator decoy work on great blue herons? Hutchings thinks not. These birds are related to egrets, which are commonly observed wading through crocodile inhabited waters.

Cormorants are a different story. They resort to swimming and diving, and are not able to fly away quickly. Waters, where cormorants land, must be safe. Thus, for cormorants, an alligator decoy might provide greater scare effectiveness. Still, be prepared to move the "gator" around often and in different locations. Otherwise, any predator bird quickly "wises up", concludes Hutchings. 🐸

**Eric Hutchings, aquaculture section  
Alberta Agriculture, Food and Rural Development  
Ph: (403) 381-5574  
[eric.hutchings@gov.ab.ca](mailto:eric.hutchings@gov.ab.ca)**



# Raising Organic Fish

Currently, no certification groups will certify fish as organic. "The problem," according to Mike Dolinski, AAFRD's provincial organic specialist, "is that there are no standards for the production of organic fish." Neither the Canadian Organic Standards, nor the Organic Crop Improvement Association Standards include fish at this time. Even the British Columbia Organic Standards, which are the major standards used in Alberta to guide organic crop and livestock production, don't have a fish production standard.

The United States is working on developing standards for fish production and once they are developed, US based organizations like the Organic Crop Improvement Association may be certifying fish in the future. Britain is also in the process of developing organic fish standards, and the European Union has a standard for sea and lake produced organic products.



Rainbow trout ready for processing could eventually be "certified organic"

There is no doubt that organic fish standards will be developed by one of the certification groups recognized globally, and that Canadians will be able to participate in the production and marketing of certified organic fish. When is the only question?

## Principles of Organic Aquaculture

"Even though we don't have standards," says Dolinski, "we can assume the same principles used for organic livestock production will apply for aquatic animal production."

- The water will have to be clean and free of contaminants. It is very likely the water will have to be more strictly monitored than other types of organic production. Residue analysis may be required on a regular basis.
- The production area will have to be surrounded by a barrier zone to prevent contamination. If there is risk from spray drift for example, a buffer zone will be required depending on your location.
- The fish will have to be fed organically certified food supplements.
- The only useable fish medications would be identified on a permitted list, if there are any approved at all.
- The fish would have to be reared so they could behave "naturally".
- The land where new ponds are excavated would likely have to be free of pesticides and commercial fertilizers for three years if digging a new dugout facility. If the facility has been used for conventional aquaculture production there would be a transition period for the rearing site. For example conventional cropland has a transition period of three years. Even if the land is raw, a

transition period of one to two years is necessary.

- Aquaculture producers would need to meet the same strict documentation and inspection protocols to maintain certification, as do other producers and processors of organic products.

- A production plan would be required to identify how you will manage effluent, deal with disease issues, obtain your feed, etc.

- Your processor will also have to be certified as organic to maintain the integrity of the product to the consumer.

Dolinski notes, "These requirements represent my educated guess based on experience with both organic crop and livestock standards and certification processes. Only time will reveal the actual requirements for organic fish production in Alberta. I would however advise that if you intend on trying to get certified for organic fish production; familiarize yourself with the general principles of organic production, practice the principles starting immediately, and keep detailed records of your efforts. Given the growth of the organic industry, it will not be long before we do have standards and a system to certify organic fish."

Since we all know that the first specialized products in the marketplace frequently bring the highest prices, organic fish production may be an opportunity for some Alberta aquaculturists. The one thing Dolinski is sure of is there will be a demand for organic aquaculture products in the near future, and those that are ready will have an opportunity to capture that niche market. 🐟

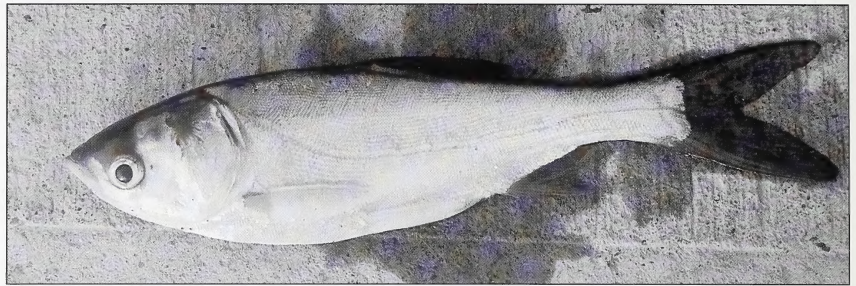
**Mike Dolinski, organic specialist,  
AAFRD, Edmonton  
(780) 422-4873  
mike.dolinski@gov.ab.ca**



# Silver Carp Algae Control Trials

The aquaculture section of Alberta Agriculture, Food and Rural Development has completed year one of a two year study involving Triploid Silver carp imported from Arkansas. Partners involved in the project include Lethbridge Community College, Prairie Farm Rehabilitation Administration, Alberta Fish Farmers Association, Eastern Irrigation District and Alberta Agriculture Research Institute.

A relative of the Asian Grass carp, the Silver carp *Hypophthalmichthys molitrix* feeds like a filter, screening certain plankton (small algae and microscopic animals) from the water. Like the Grass carp, the Silver carp are native to the colder waters of the northern Amur river basin in China (49°-50° N). They have been widely introduced into European and Israeli waters for algae control and as a food source. This somewhat oily and bony fish might be considered "course" seafood by most North American standards but Silver carp is currently one of the most widely raised food fish in the world. However, it is the



Silver carp

Silver carp's ability to eat algae that peaks the interest of Alberta pond owners.

The majority of farm dugouts in Alberta serve as multi-use water bodies. The same pond may be used for recreation, irrigation, esthetic enjoyment, a family trout fishery, as well as a water source for humans and livestock. For all these applications, water quality is of prime importance and the development of weeds and algae is, more often than not, detrimental. Good water management practices, including aeration and the prevention of excessive nutrient buildup, can go a long way towards lessening

these problems. Sometimes however, the treatment of an existing negative water quality issue is necessary. Within the movement towards environmental solutions to water management problems, the use of biological controls is becoming more common, thereby lessening the need for repeated chemical treatments. The use of a specific animal for controlling a certain pest within a larger ecological unit is one such application.

Polyculture, or the use of multiple species of fish which feed in distinctive ways, has been practiced in many parts of the world for years and is probably part of the future of Alberta and North American aquaculture. Stocking a fish like Rainbow trout, which feeds on small animal based food sources, along with herbivorous fish such as the weed eating Grass carp and the algae eating Silver carp, can contribute to the overall management of water quality and result in more pounds of fish per volume of water. While trout have been available in Alberta for private dugout stocking since the 1960's, a great deal of research and work over the past decade has recently resulted in the commercial production and availability of sterile (triploid) Grass carp, stocked as part of an overall pond management plan. While many ponds in Alberta have already been successfully stocked with trout and triploid Grass carp, the research focus now turns to the biology



Silver carp greenhouse with ponds and aquaponic beds



of algae control by triploid Silver carp.

The winter of 2000/2001 marks the halfway point in a two-year research study which proposes to study the fish's capability to survive and control algae in Alberta's farm ponds. In the summer of 2000, preliminary studies were carried out within climate controlled greenhouse ponds and tanks. Preliminary analysis of fish growth and algae density revealed that fish grew best in the ponds with the highest algae populations. Although algae growth was considered light in all the newly dug ponds, survival of triploid Silver carp was very high.

These studies will be followed up in 2001 with winter feeding and survival observations as well as full outdoor summer trials in secure ponds. Also being investigated is the ability of the triploid Silver carp to consume certain species of blue-green algae which have proven toxic to terrestrial animals that ingest water from ponds containing them.

All fish used in these studies have been certified sterile and have undergone federal government disease testing.

If research and experience with the triploid Silver carp suggests successful algae control in Alberta's dugouts and survival through our winters, other potential applications have already been identified. These include golf course water hazards, municipal lakes, potable water reservoirs, industrial dugouts, and large-scale fish production water bodies.

Time will tell if and when the triploid Silver carp proves itself. Like its cousin the Grass carp, it could become available to the public for use as an additional tool in the battle towards good water quality. 🐟

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Development  
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dan.watson@gov.ab.ca**

## Fish Processing Available

A recent visit to Brooks found Kelly Bjornson and her crew hard at work processing fresh farm raised Rainbow trout. Kelly is one link in a value chain of six Alberta businesses that produce market ready Rainbow trout.

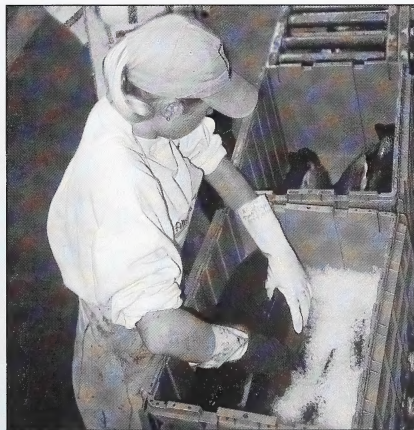
Purchased as eggs, the fish are hatched and reared in four different systems each geared to a specific size fish. By the time they reach the processing plant they are about 1.5 years old and weigh approximately 600 grams.

Usually the fish are "dressed" but they can be processed as fillets or whatever the market requires. Each fish to be dressed is opened along the belly with a single longitudinal incision, the entrails are removed along with the blood line covering the spine.

The fish are then washed clean, weighed and packed in ice. Using this procedure, a four person crew can process about 1150 kilograms of fish in a six hour period.



Dressed fish are washed clean



Processed fish are packed in ice prior to shipping

Fresh fish, even when kept properly, will perish in about 10 to 12 days so it is important to process and ship them quickly. The fish processed by Bjornson are removed from tanks in the morning, processed and shipped to market the same day. Dressed Rainbow trout will fetch from \$6.00 to \$7.00 per kilogram when sold to a wholesaler.

Bjornson is currently operating the plant two days each week, however, she is hoping to expand in the future and provide custom processing to other producers of farmed fish. 🐟

For more information regarding fish processing, contact:

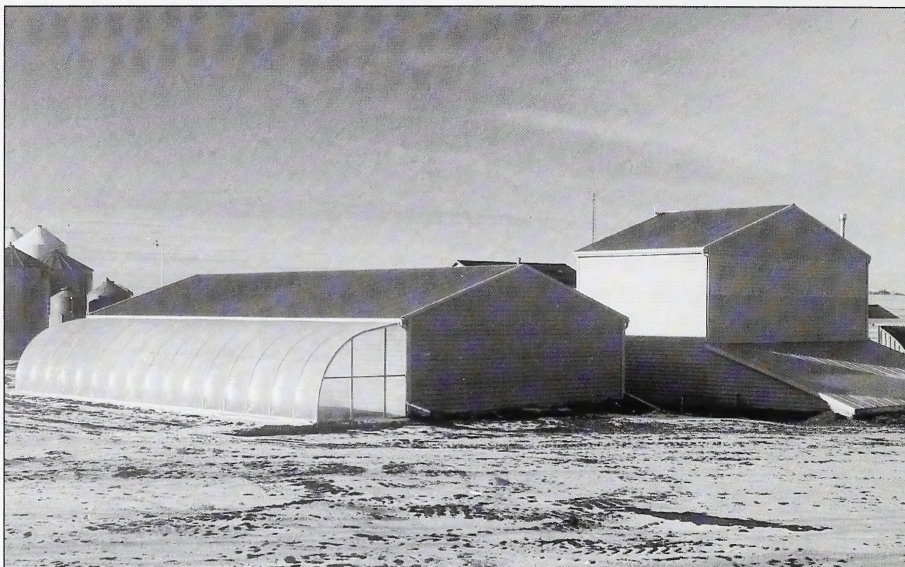
**John Bjornson  
Alberta Trout Growers  
Phone (780) 662-3474**





# Aquaculture - a New Family Farm Venture

The saying "change is inevitable" is certainly true for the McNaughton family of Rumsey, Alberta. Over the years, the mainstay of their agricultural operation has been grain and livestock production, but close to the end of the twentieth century this family made the transition from raising hogs to raising fish. Two sons returned to the farm but were not particularly interested in the hog operation, so with great deliberation and anticipation, the family decided to gut the hog barns and turn them into a fish rearing facility.



From a hog barn to a commercial fish hatching and rearing facility. Now, the McNaughton's are incorporating a second rearing site with adjoining aquaponics.

Parents, Mel and Dariel, had raised hogs for 30 years, even building a modern farrow to finish hog facility in the mid-80's. With the return of sons, Curt and Mark in the 1990's, it meant three families now needed to make a living from one farm. Several changes had to be made. More land was rented and the sons became involved in a custom spraying operation. It was felt the barn could be put to better use by putting large tanks in it and raising fish.

Considerable time was spent researching the viability of such a venture. Various aquaculture courses were taken and fish farms visited. After weighing the pros and cons of moving into aquaculture, the McNaughtons viewed it as a good opportunity for expansion to their existing operation.

March 1999 saw the start of the new design. Using jack hammers, two barns were totally gutted, then washed with pressure and steam. New concrete was poured in parts of the barn and an extension built on one end. The hog nursery became the mechanical part of the aquaculture facility, housing a sixteen

foot tall bio-filter, a drum filter, ozone generator and pumps. Because they utilize a recirculating system, a cistern was built to hold water for reuse. The main barn now holds fourteen 4-metre fiberglass tanks, 1.2 metres in height, as well as four raceways. There is room to add seven more tanks in a second barn, when markets develop.

The first batch of eggs arrived in September 1999. "You could say it was beginner's luck that most of these eggs hatched," says the McNaughtons. "Success on the next two batches humbled us a little. However, we were forewarned that in order to become true fish farmers there will be mortalities." Thus, the McNaughtons are well on their way to becoming fish farmers.

With newspaper and trade show advertising, an open house and word of mouth, the customers kept them busy delivering fish this spring. Aquaculture has been a great learning curve for all family members. Being involved in the

Alberta Fish Farmers Association and working with other players in the industry has provided much needed support. The McNaughton family is now working towards expanding market opportunities. As a variety of markets grow and expand, they will be in position to increase production of fish, fish by-products and soon grow aquaponic related crops.

As one full production season is completed, the McNaughtons believe that their 21st century fish farming venture will be every bit as successful as their hog operation. At this time they are currently adding a small greenhouse to explore the use of fish waste water for growing plants in an aquaponic environment. This venture truly involves all the family members. 🐟

For more information contact:

**MDM Aqua Farms Ltd.**  
**Rumsey (403) 368-2134**  
**darielmcnaughton@hotmail.com**



# Aquaculture Section Update ... by D. Lloyd

Bob Dylan's often quoted words, "The times, they are a-changin'", are more relative now than ever. New technologies and potential new facilities are changing the face of aquaculture across Canada. To remain competitive, Alberta must position itself in the forefront of technological advance.

The Alberta Fish Farmers Association (AFFA), Lethbridge Community College (LCC) and Alberta Agriculture Food and Rural Development (AAFRD) are working together to offer balanced training courses and technical support for Alberta's aquaculturists. Some courses are scheduled for beginning farmers interested in first time fish culture while others deal with a very specific technology for the experienced aquaculturist.

To remain competitive, Alberta is positioning itself in the forefront of technological advancement. Both the engineering and biological support unit of AAFRD's aquaculture section continue to provide technical assistance to the commercial producer in facility design evaluation, selection of

equipment and instrumentation, biological filters, ozonation, handling of wastes and other environmental concerns.

The section assists with information transfer through its book and video library resources that are available to Albertans through their nearest AAFRD district office. Seven aquaculture "fact sheets" have been published with more scheduled for 2001. Aquaculture information is available on the Internet through AAFRD's home page at [www.agric.gov.ab.ca](http://www.agric.gov.ab.ca).

Planning continues on the concept of an "Aquaculture Centre of Excellence" at the Lethbridge Community College. Ultimately, the concept for the Centre will meet the need for new research facilities, education/tech transfer, grass carp production and serve to house government and AFFA offices. It's an exciting concept and although it's in a formative stage, the framework for more specific direction seems to be not too far off. 🐟

**Duncan Lloyd, Manager of AAFRD's Aquaculture  
Section in Lethbridge. Ph: (403) 381-5539**



## Alberta Fish Farmers Association Renewed Strength for the New Millennium

On behalf of the Alberta Fish Farmers Association I would like to thank those who have supported the association in the past and continue to support the association in the present. Over the past year our membership has increased to over 150. This is great news because increased support from new members allows us to tackle more issues that concern the commercial and recreational fish farmers, the U-fish operators, as well as any individuals involved with fishing in Alberta.

During the past year the Alberta Fish Farmers Association was very busy. Our involvement on behalf of our members included the following:

- Work to increase the amount of fishing opportunities.
- Educate pond owners on how to raise, catch, and cook fish by working with Alberta Agriculture to hold "Raising Fish in Your Dugout or Pond" courses throughout Alberta.
- Partner in research that ultimately will provide more fish species to choose from, and faster growing trout strains in the future.
- Work with Environmental Protection, and Alberta Agriculture

to develop an effluent Code of Practice for Alberta fish farmers.

- Work with Canadian Aquaculture Institute, and Recirc Today, to hold the 2000 National Recirculation Workshop in July.
- Develop a web page for members and non-members to gain information about the AFFA. The address is [www.affa.ab.ca](http://www.affa.ab.ca)

Associate membership is only \$10.00. You get a bumper sticker showing others your support, and a yearly letter updating you on AFFA meetings, events, and progress on AFFA issues. If you would like to support the AFFA, or offer insight on any issues you are concerned with, become an AFFA member today by filling out our membership form included with this Bulletin, or contact Lorne Loudon, AFFA's executive assistant.

**Ph: (780) 878-3839      Email: [fishguy@connect.ab.ca](mailto:fishguy@connect.ab.ca)**

Sincerely

A handwritten signature in black ink, appearing to read "John Bjornson".

John Bjornson, President



## COURSES

**"Raising Fish in Your Pond"** is a course to be held at 20 Alberta locations, over the next winter. Planned for late January to the first week of March, these courses are organized by the Alberta Fish Farmers Association. This year, courses are scheduled for Drayton Valley, Sangudo, Leduc, Nampah, Athabasca, Vegreville, Josephburg, Bonnyville, Vermilion, Camrose, Stettler, Oyen, Calgary, Airdrie, Three Hills, Lethbridge, Brooks, Pincher Creek, Spirit River, and Falher. Contact your nearest AAFRD district office to register.

**"Basic Principles of Aquaculture,"** a two-day course is again being offered this spring by AAFRD in conjunction with the Lethbridge Community College and the Alberta Fish Farmers Association. This course is planned for March 16 and 17, to be held in Red Deer. This introductory course is intended for those interested in pursuing commercial fish culture. It provides an overview of facility design & construction, water quality, feeds, licensing, planning & marketing. A field trip to nearby fish farms is scheduled.

To obtain more information on these courses contact:

Eric Hutchings, of AAFRD's aquaculture section in Lethbridge, toll free by dialling 310-0000, then 381-5574 or dial direct with area code (403) 381-5574.

## PUBLICATIONS

A selection of aquaculture publications and videos are available on a short-term loan through your local AAFRD office.



Participants during the recent Brookstock Management course learning hands-on about spawning trout, at the Allison Creek Brood Station. This course is held every second year, in Lethbridge

Most are maintained with the aquaculture section in Lethbridge (the contact person is Judy Lee at (403) 381-5106).

The following fact sheets are available at the AAFRD office near you, or on our Internet website, including:

*Aeration of Dugouts or Ponds with Compressed Air.* Agdex 716 (B36)

*Algae Control in Ponds.* Agdex 485/716-2

*Aquaculture Profit\$ ... for a rainbow trout intensive fingerling enterprise.* Agdex 485/821-1

*Biological Weed Control in Alberta using Triploid Grass Carp.* Agdex 485/641-1

*Constructing Dugouts for Fish.* Agdex 485/716-1

*Fish Culture Licences.* Agdex 485/84-1

*Predator Damage Control.* Agdex 485/685-1

*Screening Your Fish Pond.* Agdex 485/87-1

## EVENTS

**April 26-28, 2001** Acquacultura International 2001 Exhibition and Conference, Verona, Italy. Contact: Sue Hill, Heighway Events, Haines House, 21 John Street, London WC1N 2BP UK. Tel: +44 20 7505 3608. Fax: +44 20 7831 2509. Email: sue.hill@informa.com. Website: www.veronafiare.it.

**May 6-9, 2001** Aquaculture Canada '01 - 18th annual meeting of the Aquaculture Association of Canada will be held at the Westin Nova Scotian in Halifax, NS, Canada. For more information contact Linda Hiemstra at hiemstra@mala.bc.ca.

**May 28-30, 2001** Tilapia 2001, Kuala Lumpur, Malaysia. International technical and trade conference on tilapia. Contact Infish, PO box 10899, 50728 Kuala Lumpur, Malaysia. Tel: (603) 26914466. Fax: (603) 26916804. Email: infish@po.jaring.my Website: www.Infish.org

**June 24-30, 2001** 3rd Annual Aquaponics and Tilapia Aquaculture Short Course - St. Croix, United States Virgin Islands. Visit the website for full details:

<http://rps.uvi.edu/AES/Aquaculture/UVIShortCourse.html>

or contact Dr. James Rakocy at rakocy@uvi.edu or (340) 692-4031.

## Editor's Notes

This is the first issue of Aquaculture in Alberta produced in year 2001. A second issue is planned for the fall season. If you would like to submit articles, provide us with input or be placed on the mailing list, contact the aquaculture section in Lethbridge at (403) 381-5170.

The Internet address for Alberta Agriculture, Food & Rural Development's **"Robin' the Web"** Home Page is

[www.agric.gov.ab.ca](http://www.agric.gov.ab.ca). This home page contains aquaculture information that can be accessed by first clicking on the feature "livestock/animals" and then "aquaculture".

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